

## Domain and Range MCF Opener

A pebble is dropped from a bridge into a river. The height of the pebble above the water after it has been released is modelled by the function  $h(t) = 80 - 5t^2$ , where  $h(t)$  is the height in metres and  $t$  is time in seconds.

- Graph the function for reasonable values of  $t$ .
- Explain why the values you chose for  $t$  in part (a) are reasonable.
- How high is the bridge? Explain.
- How long does it take the pebble to hit the water? Explain.
- Express the domain and range in set notation.

NEL

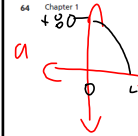
Sep 14-1:08 PM

## Domain and Range MCF Opener



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b)  $t = 0$  when the pebble is released  
 $y = 0$  when rock hits the ground

c) 80m when  $t = 0$   $h(0) = 80$

d) 4sec  $h(4) = 0$

$$D = \{t \in \mathbb{R} \mid 0 \leq t \leq 4\}$$

$$R = \{h(t) \in \mathbb{R} \mid 0 \leq h(t) \leq 80\}$$

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A baseball is hit from a height of 1 m. The height of the ball is modelled by the function  $h(t) = -5t^2 + 10t + 1$ , where  $t$  is time in seconds.

- Graph the function for reasonable values of  $t$ .
- Explain why the values you chose for  $t$  in part (a) are reasonable.
- What is the maximum height of the ball?
- At what time does the ball reach the maximum height?
- For how many seconds is the ball in the air?
- For how many seconds is the ball higher than 10 m?
- Express the domain and range in set notation.

a) 0 - 5 sec b)  $h = 0$  time it is hit  
 0 - 10 m  $h(t) = 0$  when it hits ground

c) (1, 6) 6m

d) (1, 6) 2 sec

e)  $\approx 2.1$  sec

f) 0 = it never reaches 10m

$$D = \{t \in \mathbb{R} \mid 0 \leq t \leq 2.1\}$$

$$R = \{h(t) \in \mathbb{R} \mid 0 \leq h(t) \leq 6\}$$

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## MCF 3M Review

p 68 &amp; 69

Please complete q 1-13

Chapter Self Test p70

Test

Wednesday

- Test of a Function ( Mapping and Vertical Line)
- Set Notation
- Finite Differences and Degree of a Function
- Substitution into Function Notation
- Describing Transformations
- Graphing using Vertex Form
- Defining Domain and Range
- Applications

Solutions to Review p 68 &amp; 69

$$1. a) D = \{x \in \mathbb{R} \mid 1 \leq x \leq 12\}$$

$$b) R = \{y \in \mathbb{R} \mid 11.5 \leq y \leq 11.5\}$$

c) yes it is a function

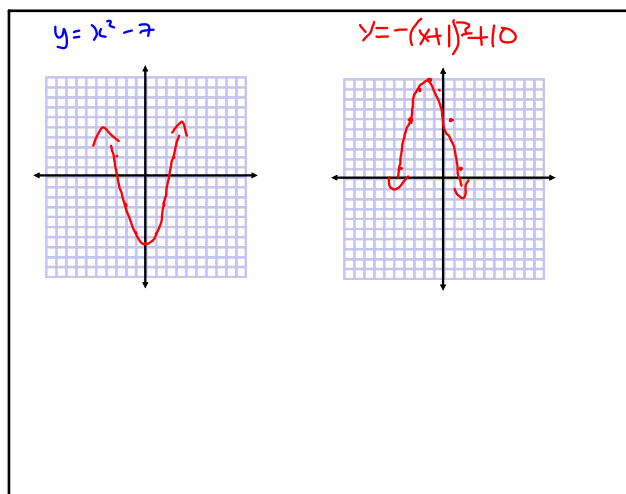
$$2. \begin{array}{c|c|c|c|c} x & y & \Delta y_1 & \Delta y_2 & \\ \hline 0 & 12 & 3 & -6 & \\ 1 & 9 & -3 & -6 & \\ 2 & 4 & -5 & -6 & \\ 3 & -3 & -7 & -6 & \end{array} = \text{Quadratic (2nd diff. equal)}$$

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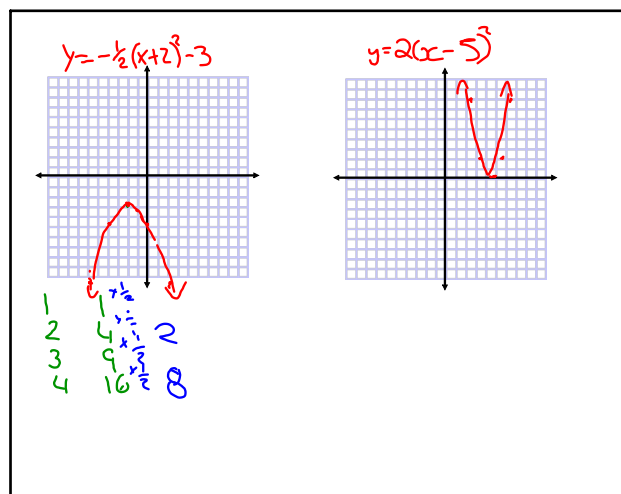
9) a) horizontal translation 5 units to the left, vertical stretch by a factor of 2, vertical reflection in the x-axis, and vertical translation 3 units down

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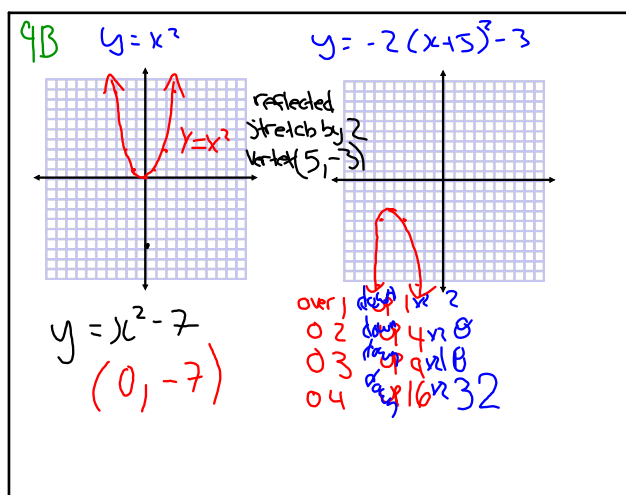
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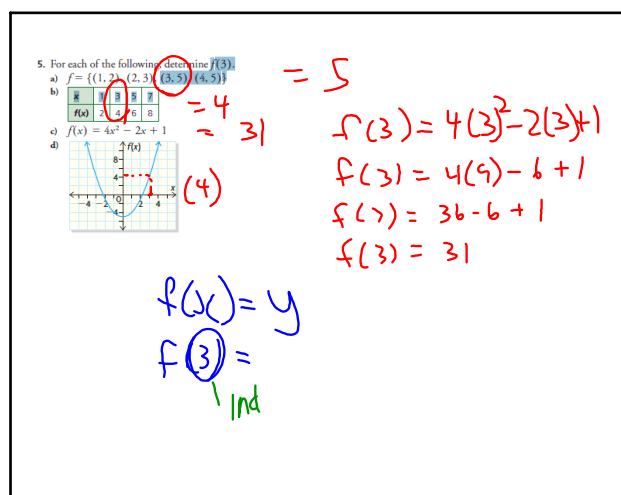
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Sep 15-10:17 AM



Sep 15-7:39 AM